

REMARKS

Claims 1-37 are pending. Pursuant to applicants' election, claims 16-21 and 30-37 are cancelled herein without prejudice to their filing in a divisional application from the present application. Accordingly, claims 1-15 and 22-29 are at issue in the present application.

The indication of allowable subject matter in claims 7 and 12-15 is noted with appreciation. Accordingly, claim 7 is rewritten in independent form to include the limitations of intervening claim 6 and its base claim 1 to put claim 7 in condition for allowance, claim 12 is rewritten in independent form to include the limitations of its base claim 10 to put claim 12, and 13 which depends therefrom, in condition for allowance, and claim 14 is rewritten in independent form to include the limitations of its base claim 10 to put it and claim 15 which depends therefrom in condition for allowance.

Claims 1-4 stand rejected under 35 U.S.C. §102(b) as anticipated by Goble et al. Claims 1 and 8 stand rejected under 35 U.S.C. §102(b) as anticipated by Lower et al. Claims 1, 9, 11, 22-26, 28 and 29 stand rejected under 35 U.S.C. §102(b) as anticipated by Standerwick et al. Claims 5 and 6 stand rejected under 35 U.S.C. §103(a) as unpatentable over Goble et al. Claim 27 stands rejected under 37 U.S.C. §103(a) as unpatentable over Standerwick et al.

The rejections, as they may apply to the claims presented herein, are respectfully traversed.

Claim 1 is directed to a bone fixation apparatus including at least one bone pin, a pin positioner for supporting the pin, and a pin holder for carrying the pin and having a pin advance assembly operably connected to the pin that allows the user to shift a pin in an advancing direction toward the bone. The pin advance assembly is integrated with the pin holder so that it stays therewith during the healing process. As amended, claim 1 calls for a housing of the pin holder that is mounted to the pin positioner and which has an opening extending in the advancing direction, and a support member (such as support block or slot follower 70 described in the present application) of the pin advance assembly through which

the pin extends for being advanced therethrough with the support member disposed in the housing opening. The pin advance assembly is operable to shift the support member together with the pin in the housing opening for advancing the pin therewith. None of the cited references show a pin holder housing, support member of a pin advance assembly, and bone pin combination as called for in amended claim 1.

Initially, it should be noted that claim 1 references a healing process which should be understood to include relatively short durations such as those needed to stabilize a damaged bone compared to the time it takes for complete healing of a damaged bone. Even so, neither Goble et al. nor Lower et al. are directed to a fixation apparatus that is to keep a bone in a fixed position relative to the apparatus during a healing process therefor, as called for in claim 1. Accordingly, neither Goble et al. or Lower et al. show a pin advance assembly that is integrated with a pin holder for staying with the positioner during the healing process, as set forth in claim 1. On the other hand, Standerwick et al. do show such an apparatus, although so far removed from the presently claimed apparatus as to be clearly distinguishable therefrom.

More specifically and referring to the amendments to claim 1, none of the cited references show a pin holder housing that is provided with an opening in which a support member of a pin advance assembly is disposed so that the pin advance assembly is operable to cause the support member to be shifted in the advancing direction therein. Moreover, none of the references show such a support member that is able to shift together with a bone pin in the advancing direction in such a housing opening (see application at page 27, line 13 - page 29, line 12; and page 46, lines 11-20).

Referring first to Goble et al., they disclose drill guides each including a mounting block having an opening to accommodate a spring loaded cog 38, 54 therein. The cogs allow respective drill sleeves 36, 50 to be pushed toward the bone but not pulled away therefrom. The cogs 38, 54 of Goble et al. do not shift in the corresponding advancing direction in an opening in their mounting blocks 32, 48, as required in amended claim 1. Further, the cogs of Goble et al. do not shift together with the drill sleeves for a

predetermined length of a housing opening similar to the support member and bone pin called for in claim 1.

Lower et al. is similarly deficient as they only disclose a drilling guide 10 including a body 12 having a bore 40 in which a pawl 30 is spring biased into engagement with teeth 24 of a hollow drill guide 22. Accordingly, Lower et al. fail to disclose or suggest a housing that is provided with an opening extending in the advancing direction in which a support member of a pin advance assembly is disposed. Lower et al. do not show any support member that is disposed in such a housing opening whereby the pin advance assembly is operable to cause the support member to be shifted together with a bone pin therein in the advancing direction. In Lower et al., when the drill guide 22 is advanced, the pawl 30 is retracted against its spring bias into the bore 40 in a direction transverse to the corresponding advancing direction. Accordingly, the pawl 30 is not a support member that shifts in a housing opening in the advancing direction as called for in amended claim 1. Further, there is no corresponding support member that shifts together with the pin in an advancing direction in the housing opening, as required in claim 1.

Standerwick et al. fail to disclose any type of housing for a pin holder akin to that called for in claim 1. As such, Standerwick et al. do not disclose or suggest a housing having an opening that extends in an advancing direction, and do not show a support member of a pin advance assembly that is disposed in such a housing opening. Consequently, Standerwick et al. do not disclose or suggest a pin advance assembly that is operable to cause a support member to be shifted in a housing opening in the advancing direction, as required in claim 1. Further, there is no teaching or suggesting of a pin advance assembly that is operable to shift a support member and pin together in a housing opening that extends in the advancing direction, as set forth in amended claim 1. Standerwick et al. simply show a threaded pin shank 10 that extends through a pair of nuts 51 and 52 on either side of a slotted, arcuate bar 4. As stated above, there is no housing having an opening that extends in an advancing direction, nor is there a support member that is disposed in a housing opening and is advanced therein by a pin advance assembly. The simple pin screw and nut structure of

Standerwick et al. does not disclose or suggest that there be a support member that shifts together with the pin in the advancing direction in a housing opening.

Accordingly, it is believed that amended claim 1, and claims 2-6, 8 and 9 which depend cognately therefrom, are allowable over the relied upon references.

Claim 10 is directed to a bone fixation apparatus and calls for a bone pin, an external pin positioner member for supporting the pin, and a pin advancing mechanism mounted to the positioner member. As amended, claim 10 calls for the pin to extend through an opening in the pin advancing mechanism for being shifted with coarse adjustments into advanced positions and into engagement with a bone. Claim 10 further requires an adjustment device that allows for fine adjustments to be made to the advanced positions of the pin so that the pin is secured to the bone with a two-stage application procedure. Standerwick et al. do not disclose or suggest a pin advancing mechanism which allows for coarse adjustments of a bone pin, and including an adjustment device which allows for fine adjustments to be made to the advanced positions of the pin as required in amended claim 10.

As previously described, Standerwick et al. simply show a threaded skull pin 10 that extends through a pair of nuts 51 and 52. To advance the pin 10 into engagement with the skull, a knob 47 is turned. The threaded pin 10 and nuts 51 and 52 do not provide two different adjustment modes so the pin can be advanced with coarse adjustments and thereafter have fine adjustments made to the advanced positions thereof. Accordingly, Standerwick et al. fail to disclose or suggest a pin that is advanced with both coarse and fine adjustments so that it is secured to a bone with a two stage application procedure as required in amended claim 10. Thus, it is believed that claim 10 and claim 11 which depends therefrom are allowable over Standerwick et al.

Claim 22 is directed to a bone fixation apparatus and calls for a plurality of bone pins, a pair of pin positioner members each supporting at least one bone pin and having arcuately configured bodies, and an adjustable connection between the arcuate bodies. Claim 22 states that the adjustable connection allows the pins supported by the arcuate bodies to be angularly shifted about an axis of an elongate bone with the bodies generally being

adjusted in a single plane transverse to the bone axis so that the bodies extend in a substantially continuous arcuate configuration from a free end of one of the bodies to a free end of the other body. Standerwick et al. fail to disclose or suggest the adjustable connection between arcuate bodies of pin positioner members with the bodies adjusted in the single plane transverse to axis of an elongate bone so that the bodies extend in a continuous arcuate configuration from a free end of one of the bodies to a free end of the other body, as called for in amended claim 22.

More particularly, Standerwick et al. show arcuate bars 2, 3 and 4 that are connected together by bolts 5, 6 and 7 at preset positions defined by sockets formed in the bars. Unlike the adjustable connection between the pin positioner member arcuate bodies called for in claim 22, the arcuate bars extend transversely to each other and do not adjust. Additionally, the skull pins supported by the bars are not adjustably connected to be angularly shifted about an axis of a bone having an elongate configuration, as in amended claim 22. More specifically, the bars of Standerwick et al. are not adjusted in a single plane that is transverse to the bone axis, as required in claim 22. Further, the bars do not extend in a continuous arcuate configuration from a free end of one of the bars to a free end of the other bar, as called for in amended claim 22. Accordingly, claim 22, and claims 23-29 which depend cognately therefrom, are believed allowable over Standerwick et al.

Based on the foregoing, reconsideration and allowance of claims 1-15 and 22-29 are respectfully requested.

Respectfully submitted,

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